

four hours after the barometer had passed its minimum: the storm lasted 14 hours 30 minutes. The rainfall was moderate. I have given you the readings on the 16th on account of the interesting coincidence between the veering completely round of the wind, and the gradual fall and rise of the barometer. On the 19th a greater storm occurred, but with a less marked connection between barogram and anemogram.

Stonyhurst, Whalley, Dec. 29

S. J. PERRY

G.M.T.	Barom.	Wind.	Force.	G.M.T.	Barom.	Wind.	Force.
Dec. 16... 2 a.m.	29.244	WSW	7	Dec. 18... 5 p.m.	28.803	SW	17
3	240	..	7	6	770	..	23
4	235	..	12	7	740	SSW	22
5	235	..	15	8	721	..	24
6	229	..	12	9	706	SW	26
7	226	SW	16	10	683	..	26
8	213	..	14	11	684	..	27
9	194	..	15	Mid.	722	WSW	24
10	184	..	14	Dec. 19... 1 a.m.	28.759	W	20
11	161	..	15	2	783	SW	13
Noon	126	..	15	3	800	..	11
1 p.m.	066	..	9	4	808	..	12
2	005	S	17	5	809	..	13
3	28.946	..	17	6	810	..	12
4	860	..	16	7	792	..	17
5	784	..	15	8	786	SSW	17
6	690	SE	4	9	769	..	23
7	608	ENE	7	10	743	..	23
8	570	NE	10	11	704	SW	18
9	581	NNE	10	Noon	681	..	16
10	629	NW	13	1 p.m.	676	WSW	26
11	664	WNW	17	2	694	..	24
Mid.	713	W	11	3	713	W	23
Dec. 17... 1 a.m.	28.738	W	22	4	740	WSW	20
2	804	..	30	5	740	..	23
3	853	..	28	6	748	SW	23
4	894	..	25	7	758	..	23
5	930	WNW	28	8	765	WSW	25
6	980	..	26	9	794	SW	25
7	29.014	W	26	10	833	W	27
8	064	..	31	11	898	WNW	27
9	090	..	32	Mid.	937	W	24
10	134	..	31	Dec. 20... 1 a.m.	960	..	23
11	170	..	31	2	29.001	WSW	15
Noon	212	..	30	3	001	W	22
1 p.m.	250	..	26	4	021	WSW	21
2	288	..	19	5	041	..	16
3	328	..	17	6	040	..	16
4	360	WSW	10	7	044	..	14
5	368	..	13	8	063	..	16
6	382	W	10	9	079	..	14
7	391	WSW	6	10	088	WNW	14
Dec. 18... 8 a.m.	28.964	SSW	5	11	088	WSW	15
9	952	SW	7	Noon	090	..	14
10	938	WSW	10	1	081	..	14
11	912	SW	14	2	081	..	15
Noon	888	..	13	3	089	..	10
1 p.m.	872	..	16	4	081	..	13
2	867	..	16	5	079	..	6
3	836	..	15	6	068	..	2
4	822	..	16				

The Suez Canal

SINCE I last addressed you I have had an opportunity of inspecting the Suez Canal under the most favourable circumstances. After a careful personal examination, and having heard the various opinions of others differing in every conceivable respect, I think that, considering all things, M. de Lesseps and his staff have much cause to feel proud of the success they have attained. To return to my previous letter, I may say, without fear of any objections which may hereafter be raised, that not only do I think the suggestions I then made are sound and practical, but that to carry them out would be most economical to the shareholders of the Canal, while to the Egyptian Government it would add probably 25 per cent. to the land revenue, by reclaiming a vast extent of desert that only requires water to make it most productive.

From inquiries also into the land settlement question of Egypt, I believe that this project of raising the canal-levels by fresh water could be carried out without any complaint being raised by the cultivators, who do the earth work, and would be repaid by title-deed to the land to be reclaimed; for, after all, the work would not be great, simply widening the present sweet-water canal some 30 metres. By a set of locks just before entering Lake Ballah from the south, and a similar set of locks before entering the bitter lakes from the north, the surface level of the water in Lake Timsah could be held up 2½ metres. Thus much of the expensive deepening and widening of the canal would be saved, which is all the more important as it is in this division of the canal that rock has been found.

It may be said that the Nile could not supply sufficient water,

but with a weir or "anicut" across the Nile at Cairo, where stone is plentiful, not only could a supply of water be obtained, but I believe the whole system of irrigation in Egypt would be greatly improved.

So much for the interests of the shareholders and the people of Egypt, but what would the ship captains say at being detained by having to pass two sets of locks?

In reply to this objection I may say, that as the passage from the Timsah Lake takes seven or eight hours of daylight either way, half an hour's detention is of no consequence, for all sea-going ships must remain a night in Lake Timsah; so that as the ship would thus be some eighteen hours in fresh water, the marine animals and weeds would most probably all drop off the ship's bottom, and so the hour's loss of time by lockage would be more than compensated by the days saved on the voyage.

I have not time at present to speak of the deposits at Port Said, or the currents at the Suez end of the Canal, but will address you on these interesting questions on some future occasion after I arrive in India. In conclusion, I must add, that the Canal authorities have one and all been most civil and obliging, showing and explaining everything.

T. LOGIN, C.E.

Late of the Ganges Canal

P. & O. Co.'s Ship *Nubia*,
Suez, November 29, 1869

NOTES

PROFESSOR HELMHOLTZ, of Heidelberg, has been elected a corresponding member of the Physical Section of the Paris Academy of Sciences in the room of M. Marianini. Votes:—Helmholtz 37, Kirchhoff 3, Sir W. Thomson 2, Ångström 1, Mayer 1. At the same meeting the Secret Committee appointed to nominate candidates for the place of corresponding member vacant owing to the death of M. Matteucci, announced the following list:—In the first rank,—M. Mayer of Heilbronn. In the second rank,—M. Ångström of Upsala, M. Billet of Dijon, M. Dove of Berlin, Mr. Grove of London, Mr. Henry of Philadelphia, M. Jacobi of St. Petersburg, Mr. Joule of Manchester, M. Kirchhoff of Heidelberg, M. Riess of Berlin, Mr. Stokes of Cambridge, Sir W. Thomson of Glasgow, Mr. Tyndall of London, M. Volpicelli of Rome. The election takes place at the next meeting of the Academy.

HER MAJESTY has been pleased to signify her desire that the Historical and Archaeological Association of Ireland be henceforth called the Royal Historical and Archaeological Association of Ireland, and that the members of the Association be styled "Fellows."

AT the meeting of the Paris Academy held on the 29th ult., the death of M. Erdmann, the Swedish geologist, was announced. M. Erdmann was chairman of the commission for the Geological Survey of Sweden.

MR JAMES NICOL and Dr. G. Dickie, the Professors of Natural History and Botany in the University of Aberdeen, have addressed a joint letter to the *Aberdeen Free Press*, defending the science-teaching of the university from some remarks made by Professor Geddes in his pamphlet on Classical Education in the North of Scotland. They show that the students have given the greater part of their school life to the classics; that the time allowed for scientific work at the university is only one-sixth of that assigned to classical studies; that the 3,000*l.* a-year given as bursaries were until recently confined solely (and still are chiefly) for merit in classics; and that a considerable sum is devoted to Classical prizes, whilst the highest honours in Natural Science have been rewarded for the last two years with the magnificent sum of 10*l.* Notwithstanding these disadvantages, and in spite of the deliberate endeavour of the commissioners appointed "for the advancement of religion and learning in the universities" to suppress the teaching of Natural Science in the university, Professors Nicol and Dickie are able to point with justifiable pride to the list of honours in Natural Science, a list

"including the names of the two Murray scholars, the chief prize now given for general proficiency in the university."

WE have received the report of the Council of the Birmingham Midland Institute, presented at the annual meeting on Monday last. It is altogether of a satisfactory character. Additional accommodation is required, and an appeal to the town is about to be made, which we hope will be heartily responded to. The following statistics of the use made of the Science Classes by students, will show the gradually increasing utility of this single side of the Institution:—1857, 578 students; 1862, 717 students; 1866, 1,371 students; 1869, 1,538 students.

WE learn from the *British Medical Journal* that the following courses of lectures will be given at the Royal College of Surgeons during the present year:—1. Six Lectures "On Dermatology," by Prof. Erasmus Wilson, F.R.S., commencing on the 31st inst. 2. Eighteen lectures by Prof. Flower, F.R.S., "On the Anatomy of the Mammalia," commencing February 14th. 3. Six lectures "On the Nature and Treatment of New Growths," by Prof. Birkett. 4. Three lectures "On the Minute Anatomy of the Eye," by Mr. Hulke, F.R.S. Professors Wilson and Flower will lecture on Mondays, Wednesdays, and Fridays, at 4 o'clock. The third and fourth courses will be given in the month of June.

THE following course for the Experimental and Natural Science Gold Medals in Trinity College has been agreed on for 1870. Physics: Jamin, Cours de Physique; Lloyd, Elementary Treatise on the Wave-Theory of Light. Chemistry: Regnault, Cours de Chimie; Naquet, Principles of Chemistry, Second Edition by Cortis; Fresenius, Chemical Analysis, Fourth Edition. Mineralogy and Geology: Dana, System of Mineralogy; Rose, Elements de Crystallographie, Edit. par Regnault; Dana, Manual of Geology, Parts I. II. and IV. Botany, Zoology and Palæontology: Huxley, Elementary Course of Botany, Parts I. and III.; Lindley, Descriptive Botany, 1858; Bentham, British Flora; Houghton, Three Kingdoms of Nature, Part III.; Greene, Manual of Protozoa and of Cœlenterata; Huxley, Lessons in Elementary Physiology; Dana, Manual of Geology, Part III.

THE Erasmus Smith Professorship of Natural and Experimental Philosophy in Trinity College, Dublin, is now vacant. The second half of the examination for candidates will be held on the 21st. The examiners are the Provost (Dr. Lloyd) and Professors Apjohn, Galbraith, and Jellett. The emoluments of the office are, to a Fellow, if elected, about 600*l.* a year; to the Professor not being a Fellow, 200*l.* a year.

THE Horticultural Society of Cologne is about to extend its original scheme so as to include a school for the scientific teaching of horticulture. It is stated that a range of buildings, to include halls, lecture-rooms, chemical laboratory, dwelling-rooms, &c., is to be immediately erected; and that the society intends to enlarge or rebuild the present orangeries, conservatories, and forcing-houses.

THE *Pall Mall Gazette* of Monday last reports at great length a lecture "On the Forefathers and Forerunners of the English People," given by Professor Huxley, at a meeting held on the preceding evening, under the auspices of the National Sunday League. The lecturer, referring to the arguments now commonly brought forward, upon the assumption that the Irish and English nations belong essentially to different races, denied that there was sufficient proof of the existence of any difference whatever between Celt and Anglo-Saxon, except that of language. He thinks it probable, moreover, that Ireland as a whole contains less Teutonic blood than the eastern half of England, and more than the western half. Our readers may remember that the question of the amount of the Celtic element in the existing English nation was prominently brought before the public in a

recent Chancery suit. The claims to originality put forward by the plaintiff in that suit are now disputed by Dr. Daniel Wilson, of Toronto, who communicates to the last number of the *Canadian Journal* a somewhat verbose article pointing out that the results obtained by the plaintiff from craniological investigations were anticipated in all essential particulars in earlier writings of Dr. Wilson's.

THE pressure on our space is so great that we have been unable to lay before our readers the communications on the Suez Canal, presented to the Royal Society by Mr. Bateman, and to the Geographical Society by Lord Houghton; they have, however, been given at some length in the daily press. One point of great scientific interest came out in the discussion at the Geographical Society. Mr. Fowler stated that the evaporation from the Bitter Lakes would require a supply of 250,000,000 cubic feet daily, *i.e.*, a flow in the Canal of $1\frac{1}{2}$ miles per hour. On all hands the Canal is acknowledged to be a complete success, and its probable influence on the trade of Mediterranean ports may be estimated from the fact mentioned by Lord Houghton, that the Emperor of Austria said that "he was there to represent Trieste."

WE are glad to learn from the *Architect* that it has been decided to establish a School of Science and Art at Dover.

THE Swiss are about to supplement, or supersede, their great "Dufour" Map, by another upon a much larger scale. The "Dufour" Map, on a scale of $\frac{1}{100,000}$ (about $\frac{1}{2}$ of an inch to a mile), is in twenty-five sheets, and is printed in black only; but the new map is to be on a scale of $\frac{1}{200,000}$ for the plains, and $\frac{1}{100,000}$ for the mountainous districts. It is to be printed in three colours, and will contain no less than 540 sheets. Roads, towns, and trees are inserted in black, and rivers and glaciers in blue: the third printing, in red, is devoted to contour lines. The distance between each contour line expresses a height of 100 Swiss feet in the mountains, and 33·3 Swiss feet in the plains. It was intended at first to have a fourth printing, in green, for the forests, but this has been abandoned on account of the expense. Several sheets of this map, all admirably executed, have already been issued. At the same time they are reducing the "Dufour" Map to the scale of $\frac{1}{200,000}$. This reduction will be in four sheets, and for tourists or for general use will be much more handy than the larger map. It is said that it will be even superior to the original map in the picturesque relief, for which the latter is so remarkable. Three years more will be required to finish the reduced map, of which two sheets are already published.

M. BOVIS has been appointed Professor of Toxicology at the Upper School of Pharmacy in Paris.

WE cull the following notes from the last number of the *Journal of the Society of Arts*:—

The Royal Agricultural Society has been giving its attention to the adulteration of manures and feeding cakes, and is conducting some analyses.

The oxy-hydrogen light is now largely used in Paris for illuminated advertisements and theatrical purposes. Carts with metal reservoirs containing the compressed oxygen for the supply of customers may be seen in the streets. At the Gaieté Theatre, which is one of the largest consumers, cylinders of magnesia or zirconia take the place of the lime cylinders ordinarily used for this light.

In connection with the systematic destruction of timber in Australia, it is mentioned that in the Ballarat district this destruction has been accompanied by a corresponding diminution in the rainfall, and that since 1863 there has been a more or less regular reduction from 37·27in. in 1863 to 14·23in. in 1868. The Government has recently appointed an Inspector of State Forests, whose duty it will be to prevent the waste of timber, and establish nurseries of forest trees in various parts of the colony.